
List of Pollutants Identified for Emissions Testing of Gas Turbines

presented to:

ICCR Coordinating Committee
Houston, TX

presented by:

Dr. Ted Guth
Combustion Turbines Source Work Group

November 19, 1997

Combustion Turbines Work Group

Available Emissions Data

- .. The current emissions database has been built from emission test reports for HAPs.

- .. Number of gathered tests:
 - Natural Gas 26
 - Diesel (#2 Fuel Oil) 12
 - Landfill Gas 11
 - Digester Gas 3
 - Refinery Gas 1
 - Field Gas 1

Combustion Turbines Work Group

Available Emissions Data, con't.

- .. Qualitative description of emissions database:
 -
 - WG reviewed all gathered reports for inclusion of necessary operating parameters. Results indicate incomplete references to operating conditions during testing
 -
 -
 - Test reports are not available for all fuels
 -
 -
 - No add-on control devices were tested
-

Combustion Turbines Work Group

Pollutant List Selection

Selected Pollutants for Testing

- The Work Group has completed discussion on the list of pollutants for all fuels
-
- The Work Group reached consensus on the list of pollutants for all fuels, with the exception of dioxin from landfill gas-fired turbines. The minority position on this issue is to include dioxin on the list of pollutants for landfill gas-fired turbines. A more detailed discussion on this issue is presented in the file “CT19NO7M.wp6”
-
- Criteria pollutants will be measured simultaneously with HAP pollutants. The criteria pollutants include carbon monoxide (CO), oxides of nitrogen (NO_x), total hydrocarbons (THC), and particulate matter (PM) (for liquid fuels);

-

Combustion Turbines Work Group

Pollutant List Selection, con't.

- List of pollutants will include, at a minimum, ALL pollutants for natural gas-fired turbines regardless of fuel
-
- Only pollutants measured at levels higher than the corresponding detection limits are included
-
- The metallic HAPs (identified by an * on the pollutant lists) will be measured using fuel analysis.

Combustion Turbines Work Group

Non-detected Pollutants

The following pollutants were tested for but not detected in the gathered test reports:

- Natural Gas:
 - 1,3-Butadiene*
 - Cadmium*
 - Chromium(VI)*
 - Manganese*
 - Lead*
 - NMDA*
 - Propylene Oxide*
 - NMOR*
 - TMA*
- Diesel (#2 Fuel Oil):
 - 1,3-Butadiene*
 - Dioxins*
 - Furans*
 - Selenium*
- Refinery Gas:
 - Benzene*
 - Chromium(VI)*
- Field Gas:
 - Benzene*

Combustion Turbines Work Group

List of Pollutants

.. Natural Gas:

- The list of HAPs for natural gas-fired turbines include all HAPs which were reported at levels higher than the corresponding test method detection limit as well as the HAPs referenced by the ICCR TMPWG and EPRI

-

<i>2,2,4-Trimethylpentane</i>	<i>Acetaldehyde</i>	<i>Acrolein</i>
<i>Arsenic Compounds*</i>	<i>Benzene</i>	<i>Biphenyl</i>
<i>Ethylbenzene</i>	<i>Formaldehyde</i>	<i>Hexane</i>
<i>Mercury Compounds*</i>	<i>Methanol</i>	<i>Naphthalene</i>
<i>PAH</i>	<i>Phenol</i>	<i>Styrene</i>
<i>Toluene</i>	<i>Xylene (o, m, & p)</i>	

*(*Metallic HAPs- will be tested in fuel analysis)*

Combustion Turbines Work Group

List of Pollutants

.. #2 Fuel Oil:

- The list of HAPs include the pollutants identified under natural gas-fired turbines and the following:

*Beryllium Compounds**

*Cadmium Compounds**

*Chromium Compounds**

*Manganese Compounds**

*Lead Compounds**

*Nickel Compounds**

*(*Metallic HAPs- will be tested in fuel analysis)*

Combustion Turbines Work Group

List of Pollutants

.. Landfill Gas:

- The list of HAPs include the pollutants identified under natural gas-fired turbines and the following:

-

Acetonitrile

Methylene Chloride

Tetrachloroethylene

Vinyl Chloride

Note: There is non-concurrence on excluding dioxin from the list of pollutants for landfill gas-fired turbines.

Combustion Turbines Work Group

List of Pollutants

.. Digester Gas:

- The list of HAPs include the pollutants identified under natural gas-fired turbines and the following:

-

Methylene Chloride

Tetracholoroethylene

*Selenium Compounds**

*(*Metallic HAPs- will be tested in fuel analysis)*

Combustion Turbines Work Group

List of Pollutants

- “ Refinery Gas, Field Gas:
 - The list of HAPs include the pollutants identified under natural gas-fired turbines.